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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/073,859

02/14/2002

Warren Stuart Crippen

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6329

7590

02/14/2005

Blakely Sokoloff Taylor & Zafman, LLP
12400 Wilshire Boulevard
Seventh floor
Los Angeles, CA 90025

EXAMINER

GRAYBILL, DAVID E

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 02/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/073,859	Applicant(s) CRIPPEN, WARREN STUART	
	Examiner David E. Graybill	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's election of claims 13-27 in the reply filed on 11-24-4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The drawings are objected to because the features of Figures 8 and 9 are obscured. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement

sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The disclosure is objected to because in paragraphs 4, 18 and 22, the disclosure that the dielectric is silicon appears to rely on inconsistent and incompatible terminology because silicon is not a dielectric.

35 U.S.C. § 101 reads as follows:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title."

Claim 24 is rejected under 35 U.S.C. § 101 because it recites an inoperative invention.

Specifically, the limitation, "the layer of dielectric comprises a layer of silicon" is inoperative because it violates the conventionally held scientific principle that silicon is not a dielectric.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The undescribed subject matter is the limitation, "the layer of dielectric comprises a layer of silicon."

The following is a quotation of the second paragraph of 35

U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation, "the layer of dielectric comprises a layer of silicon," is incomprehensible because silicon is not a dielectric.

In the rejections *infra*, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13-27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Akram (6124634).

At column 4, line 29 to column 6, lines 37, Akram discloses the following:

A microelectronic die package comprising: a die substrate 20; a layer of dielectric 26 mounted to the die substrate; a thermally conductive material Cu disposed in an inner region located between the die substrate and the layer of dielectric; and elements 38 disposed between an outer region located outside of the inner region and the thermally conductive material disposed in the inner region; the thermally conductive material inherently defines zones; and the elements comprise a device in thermal contact with the thermal contact zones; the thermally conductive material comprises a layer of thermally conductive material; the die substrate defines at least one via 22 therein, at least some of the layer of thermally conductive material being located in the at least one via, the at least some of the layer of thermally conductive material further defining the zones and inherently

being in thermal contact with the elements; the elements comprise solder in thermal contact with the zones; and a device Cu inherently in thermal contact with the solder; the device is attached to the solder; an adhesion promoter Cr disposed between the thermally conductive material and the die substrate.

A microelectronic die package comprising: a silicon wafer 320 defining a plurality of vias therein; a layer of copper on the silicon wafer, at least some of the copper being disposed in the plurality of vias; a layer of silicon 12 disposed on the layer of copper, the layer of copper being disposed in an inner region located between the silicon wafer and the layer of silicon; a microelectronic "integrated" circuit provided on the layer of silicon; and elements disposed between an outer region located outside of the inner region and the layer of copper in the inner region; the zones in the plurality of vias being in thermal contact with the elements, the elements comprising: solder in thermal contact with the zones in the plurality of vias; and a device in thermal contact with the solder; the device is attached to the

solder; an adhesion promoter disposed between the layer of copper and the silicon wafer.

A thermally conductive microelectronic die substrate for a microelectronic die comprising: a die substrate; and a thermally conductive material provided on the die substrate and defining zones configured; a layer of dielectric mounted to the die substrate, the thermally conductive material being disposed in an inner region between the die substrate and the layer of dielectric; the die substrate comprises a silicon wafer; the layer of dielectric comprises a layer of silicon mounted to the silicon wafer; and the thermally conductive material comprises a layer of copper in the inner region, the silicon wafer further defining at least one via therein, and some of the layer of copper being disposed in the at least one via.

A microelectronic die package comprising: a die substrate, a layer of dielectric mounted to the die substrate; means Cu disposed in an inner region located between the die substrate and the layer of dielectric for effecting a dissipation of heat away from

the microelectronic circuit; and means 38 in thermal contact with the means for effecting for directing heat away from the die through the means for effecting; the means for effecting comprises a layer of copper; wherein the means for directing inherently comprises a device.

Although Akram does not appear to explicitly disclose the limitations, "thermal contact," "heat dissipation," "to effect a dissipation of heat away from the die," "to enhance an adhesion of the layer of thermally conductive material to the die substrate," "to define thermal contact zones in the plurality of vias," "to effect a dissipation of heat away from the microelectronic circuit," "to enhance an adhesion of the copper to the silicon wafer," and, "to define the thermal contact zones," these statements of intended use of the product do not appear to result in a structural difference between the claimed product and the product of Akram. Further, because the product of Akram appears to have the same structure as the claimed product, it appears to be inherently capable of being used for the intended

uses, and the statements of intended use do not patentably distinguish the claimed product from the product of Akram. The manner in which a product operates is not germane to the issue of patentability of the product; Ex parte Wikdahl 10 USPQ 2d 1546, 1548 (BPAI 1989); Ex parte McCullough 7 USPQ 2d 1889, 1891 (BPAI 1988); In re Finsterwalder 168 USPQ 530 (CCPA 1971); In re Casey 152 USPQ 235, 238 (CCPA 1967). Also, "Expressions relating the apparatus to contents thereof [in Akram, heat] during an intended operation are of no significance in determining patentability of the apparatus claim."; Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). And, claims directed to product must be distinguished from the prior art in terms of structure rather than function. In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does [or is intended to do]." Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

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The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

For information on the status of this application applicant should check PAIR:

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (703) 872-9306.



David E. Graybill
Primary Examiner
Art Unit 2827

D.G.
10-Feb-05